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CLAIM AMENDMENTS

1. *(Currently amended)* A method for producing a population of genetically altered human embryonic stem (hES) cells, comprising:
 - a) obtaining a population of hES cells essentially free of feeder cells ~~and maintained on an extracellular matrix~~; and
 - b) transfecting the cells with a polynucleotide while being cultured ~~in the culture environment on an extracellular matrix in a medium conditioned by fibroblast feeder cells~~, wherein the polynucleotide comprises a protein encoding region operably linked to a promoter that promotes transcription of the encoding region while the cells are undifferentiated, thereby producing genetically altered hES cells that express the protein while undifferentiated.
2. *(Original)* The method of claim 1, further comprising preferentially selecting cells that have been genetically altered with the polynucleotide.
3. *(Previously presented)* The method of claim 1, wherein the human embryonic stem cells are maintained in an environment comprising extracellular matrix components and a conditioned medium produced by collecting medium from a culture of feeder cells.
- 4 & 5. **CANCELLED**
6. *(Previously presented)* The method of claim 1, wherein the polynucleotide is selected from an adenoviral vector, a retroviral vector, and a DNA plasmid complexed with positively charged lipid.
7. **CANCELLED**

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8. *(Previously presented)* A cell population comprising undifferentiated human embryonic stem (hES) cells expressing a protein from a heterologous polynucleotide in which an encoding region for the expressed protein is operably linked to a promoter that promotes transcription of the encoding region while the hES cells are undifferentiated.
9. *(Previously presented)* A cell population comprising undifferentiated hES cells stably transfected so as to express a protein from a heterologous polynucleotide in which an encoding region for the expressed protein is operably linked to a promoter that promotes transcription of the encoding region while the hES cells are undifferentiated.
- 10 to 12. **CANCELLED**
13. *(Previously presented)* The cell population of claim 8, in which at least 90% of the undifferentiated hES cells have been genetically altered.
14. **CANCELLED**
15. *(Previously presented)* The cell population of claim 9, in which at least 90% of the undifferentiated hES cells have been stably transfected.
16. *(Previously presented)* A method for producing genetically altered differentiated cells, comprising differentiating the cells of claim 9.
17. *(Currently amended)* A method for producing genetically altered differentiated cells, comprising:
- a) obtaining a population of hES cells essentially free of feeder cells and maintained on an extracellular matrix in a medium conditioned by fibroblast feeder cells; and
 - b) transfecting at least some of the cells in the composition with a polynucleotide, thereby producing genetically altered cells; and
 - c) causing the genetically altered cells to differentiate into a population of neural cells or hepatocytes.
18. *(Previously presented)* The method of claim 16, whereby the genetically altered cells are differentiated into neural cells.
19. *(Previously presented)* The method of claim 16, whereby the genetically altered cells are differentiated into hepatocytes.

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20. *(Previously presented)* The method of claim 17, whereby the differentiated cell population is over 50% neural cells.
21. *(Previously presented)* The method of claim 17, whereby the differentiated cell population is over 50% hepatocytes.
22. *(Previously presented)* The method of claim 1, wherein the polynucleotide encodes a drug resistance gene.
23. *(Previously presented)* The method of claim 2, wherein the selecting comprises culturing the cells in the presence of a drug to which genetically altered cells in the population are resistant.
24. *(Previously presented)* The method of claim 1, wherein said promoter is selected from the EF1a promoter and the PGK promoter.
25. *(Previously presented)* The cell population of claim 8, wherein said promoter is selected from the EF1a promoter and the PGK promoter.
26. *(Previously presented)* The cell population of claim 9, wherein said promoter is selected from the EF1a promoter and the PGK promoter.
27. *(Previously presented)* The cell population of claim 8, which consists of human cells.
28. *(Previously presented)* The cell population of claim 9, which consists of human cells.
29. *(Previously presented)* The cell population of claim 8, wherein the protein is a factor that supports growth of the hES cells.
30. *(Previously presented)* The cell population of claim 29, wherein the protein is a fibroblast growth factor.
31. *(Previously presented)* The cell population of claim 8, wherein the protein is a detectable label.
32. *(Previously presented)* The cell population of claim 31, wherein the label is a fluorescent label.
33. *(Previously presented)* The cell population of claim 32, wherein the label is selected from luciferase and green fluorescent protein (GFP).

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34. *(Previously presented)* The cell population of claim 31, wherein the label is a cell surface protein detectable by antibody staining.
35. *(Previously presented)* The cell population of claim 31, wherein the label is an enzyme.
36. *(Previously presented)* The cell population of claim 35, wherein the label is selected from alkaline phosphatase, β -galactosidase, and neophosphotransferase.